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## PAPERS AND ORIGINALS

## Management of acute stroke in the elderly: follow-up of a controlled trial

W M GARRAWAY, A J AKHTAR, L HOCKEY, R J PRESCOTT

### Summary and conclusions

Follow-up of a controlled trial of the management of acute stroke in the elderly showed that the improvement in functional outcome at the time of discharge from hospital that had been achieved through establishing a stroke unit had disappeared by one year. Factors that might have contributed to this included overprotection by the families of patients who had been treated in the stroke unit, who were not permitted to carry out activities of daily living in which they were independent, and the early discharge from medical units of patients whose full rehabilitation potential had not been realised.

Prolonging the benefits of short-term gains in functional outcome through the intervention of a stroke unit requires that all the links in the chain of stroke rehabilitation are maintained, including the proper orientation of patients' families before discharge from hospital.

### Introduction

The management of stroke continues well beyond the acute phase in hospital.<sup>1</sup> Long-term follow-up is required to establish whether gains made during hospital treatment are maintained after discharge. The preliminary results of a controlled trial comparing the management of elderly patients with acute stroke in a stroke unit and in medical units showed that the stroke unit improved the natural history of stroke by increasing

the proportion of patients who were returned to independence at the time of hospital discharge. We now report the results of the follow-up undertaken in this trial.

### Methods

The essential features of the study have been described.<sup>2</sup> The follow-up started once patients had been discharged from hospital or at a cut-off point 16 weeks after admission and lasted for one year. During this period all patients were visited at monthly intervals and an index of nursing dependency administered. This index was designed to establish the degree of assistance that patients received when performing activities of daily living during the 24 hours preceding each visit. The design, composition, and use of the index are described elsewhere.<sup>3</sup> The functional outcome at the end of the follow-up was assessed by the same criteria and methods that were applied at hospital discharge.<sup>4</sup>

### Results

Eighteen patients from the stroke unit and 12 from medical units died during the follow-up. Six patients in each group were lost to follow-up, leaving 101 patients from the stroke unit and 91 patients from medical units whose outcome was reassessed. The initial improvement in outcome brought about by the stroke unit as shown by the increased proportion of patients assessed as independent at discharge had disappeared by one year, with 56 patients (55%) from the stroke unit being reassessed as independent compared with 52 (57%) of the patients discharged from medical units. The table summarises the changes in outcome that occurred between hospital discharge and the end of follow-up. Thirteen out of 67 previously independent patients from the stroke unit (19%) became dependent. On the other hand, 11 out of 45 previously dependent patients from medical units (24%) were classified as independent. We identified factors that might have contributed to these changes.

*Assistance given to patients from the stroke unit*—Over 80% of all surviving patients lived in their own homes at any point during the follow-up, the overwhelming majority living with relatives or friends. We compared the activities of daily living these patients were actually performing with those they were capable of performing. Human assistance was provided for all patients living at home who were dependent when discharged from hospital. There were appreciable differences, however, between the proportions of independent

University Department of Community Medicine, Edinburgh EH9 1DW

W M GARRAWAY, MD, MFCM, senior lecturer

Royal Victoria Hospital, Edinburgh EH4 2DN

A J AKHTAR, MB, FRCP, consultant physician in geriatric medicine

University Department of Nursing Studies, Edinburgh EH8 9JT

L HOCKEY, PHD, SRN, director of nursing research unit

Medical Computing and Statistics Unit, Edinburgh EH8 9AG

R J PRESCOTT, MSc, PHD, senior lecturer

patients who had been treated in the stroke unit and in medical units who received help when performing activities of daily living (figure). At the beginning of the follow-up 58 (58%) of the patients discharged from the stroke unit and 34 (37%) of those discharged from medical units received assistance for at least one activity in which they had been assessed as independent at hospital discharge. When dependent patients were examined a higher proportion from medical units were carrying out activities unaided compared with patients from the stroke unit as the follow-up progressed. Thus independent patients from the stroke unit were allowed to do less during the follow-up

improvement in the natural history of the disease, it did not provide a sustained or long-term advantage over more conventional management in medical units. The data do not provide conclusive reasons why this should have occurred.

A larger number of patients assessed as independent at discharge from the stroke unit subsequently regressed to functional dependence compared with patients discharged from medical units. This may have occurred as a result of the greater protection given by the caring relatives and friends, who

#### Comparison between functional outcome at discharge from hospital and end of follow-up

		At hospital discharge					
		Stroke unit			Medical units		
		Independent	Dependent	Total	Independent	Dependent	Total
At follow-up	Independent	54	2	56	41	11	52
	Dependent	13	32	45	5	34	39
	Total	67	34	101	46	45	91

than independent patients from medical units; and dependent patients from medical units were allowed to do more than similar patients from the stroke unit.

*Early discharge of patients from medical units*—Mean duration of hospital stay was 47 days for patients judged at discharge from medical units to be dependent who were reassessed as independent at the end of follow-up compared with 91 days for patients from

provided more assistance and thereby did not permit patients from the stroke unit to carry out activities of daily living of which they were capable. Relatives and friends of patients who had been in the stroke unit must have had a heightened awareness of the patients' disabilities as a result of the better communication that existed with members of the staff of the stroke unit (Murray SK, Garraway WM, Akhtar AJ, *et al.* Communication between home and hospital in stroke rehabilitation: results from a controlled trial. In preparation). Thus the opportunity was available to give adequate orientation and instruction to the families of patients in the stroke unit about the need to maintain gains made during the acute phase of rehabilitation. But the extent to which this opportunity was taken and the reasons why families might have adopted a more protective role to the detriment of the long-term functional outcome of these patients are not known.

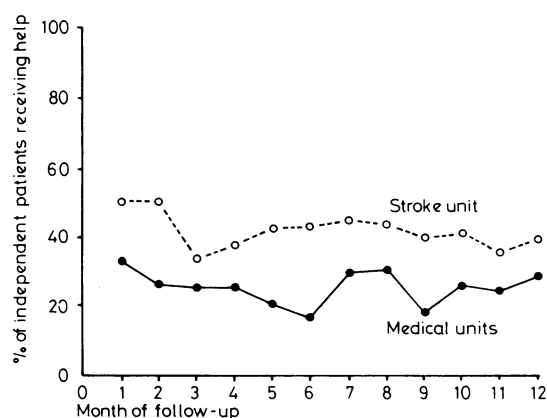
The other factor that contributed to the final outcome was the larger number of patients from medical units who were dependent at hospital discharge but who gained their independence during the follow-up. This group had stayed in hospital for a much shorter period than other patients in the medical units. Consequently they received less physiotherapy and occupational therapy, and we postulate that their full rehabilitation potential had not been realised when they were discharged from hospital. Pressure on medical-unit beds created predominantly by patients with strokes has been recognised as a problem<sup>5</sup>; but we cannot ascertain the extent to which this might have been responsible for the early discharge from the medical units of the patients whose rehabilitation potential might not have been fully realised.

The results of the follow-up do not negate the potential improvement in the management of acute stroke in the elderly that might arise from establishing stroke units. They do, however, confirm that management of stroke continues well beyond the acute phase in hospital. They also suggest that if the input of only one factor in the chain of stroke rehabilitation is inappropriate, incomplete, or missing the contribution of all the other factors may not lead to the successful long-term maintenance of patients with stroke returned to independence in the community.

We are grateful to all the members of the research staff who worked on the project during 1974-80 and the department of medicine (Western General Hospital) for providing office accommodation.

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Requests for reprints should be addressed to WMG.



Percentage of patients classified as independent when discharged from hospital and living at home with family or friends who received help with activities of daily living.

medical units whose outcome did not change. Hence the patients from medical units whose functional outcome changed to independent during the follow-up received less physiotherapy (a mean of 26 hours over 34 days) than the other patients discharged from these units (a mean of 42 hours over 89 days). A similar trend occurred in the use of occupational therapy (a mean of 40 hours over 31 days compared with 51 hours over 78 days). These trends did not apply to patients treated in the stroke unit.

#### Discussion

The results of this follow-up are both surprising and disappointing. They emphasise the importance of following up patients over a sufficiently long period to be certain that improvements in the natural history of a disease produced by interventions in the working of health services do not disappear when the intervention is withdrawn. Thus while intervention in the management of stroke at an early stage after onset through the establishment of a stroke unit created a temporary

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# Evaluation of single-dose hypnotic treatment before elective operation

M R B KEIGHLEY, M GANNON, J WARLOW, C R M JENKINS, R J GAMMON

## Summary and conclusions

A prospective randomised double-blind controlled trial was carried out to evaluate the place of a single dose of triazolam, flurazepam, and placebo on the evening before an elective operation in 96 patients. Features of sleep were recorded by patients and nurses on questionnaires. Onset of sleep was delayed and duration of sleep reduced in two-thirds of patients allocated placebo compared with their normal sleep pattern. Two-thirds of these patients also complained of waking more than twice during the night. Both hypnotics significantly improved the duration and time of onset of sleep and reduced the frequency of waking when compared with the placebo. Patients who took triazolam, however, fell asleep faster and woke less often than those who took flurazepam. Furthermore, triazolam appeared to have advantages over flurazepam before major surgery.

Thus giving a single dose of a hypnotic on the night before an elective operation improves the patient's sleep, and greater benefit was derived from triazolam than flurazepam.

## Introduction

Little is known about the influence of hospital admission on sleep before operation. We have found, however, that many patients complain that sleep is disturbed before even minor operations. Alterations in preoperative sleep have been reported before open heart surgery, but severe disruption of sleep occurred only after operation.<sup>1</sup> Data on patients undergoing non-cardiac operations are sparse. Detailed observations on 10 patients undergoing elective herniorrhaphy showed decreased sleep time and reductions in the durations of rapid eye movement and deep sleep before operation.<sup>2</sup> These minor changes were attributed to anxiety, fear, and the presence of a new environment that inhibited the duration and depth of sleep. In

view of the lack of knowledge concerning disturbance of sleep and the value of hypnotics before operation we undertook a randomised double-blind controlled trial to compare a hypnotic with a short half life (triazolam)<sup>3</sup> and one with a long half life (flurazepam)<sup>4</sup> against a placebo before elective operation.

## Patients and methods

All patients under the care of one surgeon admitted to two surgical wards were included in the trial provided that they were undergoing elective operation and were aged 18-65 years. Patients were excluded if they had recently been prescribed anticonvulsants, antihistamines, or appetite suppressants; if they had been habitually taking 5 mg or more of nitrazepam or 15 mg or more of flurazepam; and if they had taken any hypnotic or benzodiazepine within three days of the operation. We explained to all patients that a capsule was being prescribed that might improve the duration and quality of sleep on the night before operation.

A questionnaire was given to the patients before the trial drug was administered so that they could study the document and were aware of the questions that they had to answer the next morning. Patients considered suitable for inclusion in the trial were allocated at random to receive one of the following: triazolam 0.25 mg, flurazepam 15 mg, and placebo. These were all presented in identical capsules. The medication was administered half an hour before lights out. The night nurses who dispensed the drugs were also given a simple questionnaire for each patient enrolled in the trial. The patients were checked hourly to ascertain whether they were asleep. Nurses were asked to assess the overall quality of the patients' sleep as bad, reasonable, or very good.

The patient questionnaire asked the following questions: (1) Did the capsule help you sleep? (2) How often did you wake during the night? (3) How quickly did you fall asleep? (4) How long do you think you slept? (5) How do you feel this morning? (6) Were you satisfied with your night's sleep?

The study was confined to the immediate preoperative period, and we did not attempt to evaluate the long-term effects of single-dose treatment.

## Results

The study included 108 patients, but 12 had to be excluded because they had been habitually taking hypnotics or had taken a hypnotic within three days of admission; thus we present data on 96 patients. Table I shows the distribution of patients and compares the groups for age, sex, and operation.

The results of the nurses' questionnaire indicated that eight patients given placebo (26% of those for whom data were complete) were considered to have had a poor night's sleep compared with two (6%) given flurazepam and two (6%) given triazolam. When the data were analysed using a Mann Whitney U test for ranked scores only the patients who had received triazolam were considered by the nurses

### General Hospital, Birmingham B4 6NH

M R B KEIGHLEY, MS, FRCS, consultant surgeon and reader in surgery  
M GANNON, MB, BS, house surgeon (present appointment: demonstrator of anatomy, University of Birmingham)  
J WARLOW, MB, BS, house surgeon (now principal in general practice, Hansworth, Birmingham)

### Upjohn Limited, Crawley, West Sussex RH10 2NJ

C R M JENKINS, clinical research associate  
R J GAMMON, BSC, DIPBIOM, medical services manager